

# Normal Semen Parameters

- \* Abstinence 2-7 days
- \* Collected in clean sterile container
- \* transported to lab in

## ④ physical examination:

- ① Colour: Normal greyish white.
- ② Odour:
- ③ Volume: measured by graduated cylinder. Normally  $> 1.5 \text{ mL}$
- ④ Liquifaction: Semen should be liquified within or after 30 min (in vitro) and 5 min (in vivo)
- ⑤ Viscosity: it's the ability of the liquified semen to poured drop by drop from a wide pore pipette. Normally, it's poured drop by drop.
- ⑥ pH: 7.2 - 8 ie Alkaline.

## Microscopic examination:

### ① Sperm Concentration

Sperm Count/mL  $\geq 15 \text{ million/mL}$

OR total sperm count/ejaculate  $\geq 38 \text{ million/ejaculate}$

### ② Sperm motility, viability:

5 microscopic fields are assessed to classify 200 sperms quantitative, qualitative.

- \* Quantitative by counting mobile, non mobile to know the percent of mobile sperm
- \* Qualitative to measure quality of sperm motility.

Grade A  $\rightarrow$  Rapid progressive

Grade B  $\rightarrow$  Slow progressive

Grade C  $\rightarrow$  Non progressive

Grade D  $\rightarrow$  Non mobile



Normal findings:

A+B > 32%

A+B+C > 40%

viability > 58%

(c) Sperm morphology:

Head → oval, smooth

mid piece → found, Normal

tail → uniform, thinner than mid piece, free from kinks, uncoiled

Abnormal forms < 96%

(d) Sperm agglutination:

stuck of the sperms (head to head, tail to tail) by Antibodies.

Normally there's no sperm agglutination in Normal semen. but there may be sperm aggregation (dead sperms stuck with other cell or debris).

(e) Round cell (Non sperm cell)

- Leucocytes Normal 1 million/mL

- RBC

- Epithelial cells.



# Azoospermia

it means Absence of sperms from semen. it's diagnosed after at Least ② semen analysis showing no sperms even after centrifugation.

Azoospermia is present in  $< 1\%$  of all men and is present in 10-15% of infertile men. it's classified into obstructive, non obstructive. Azoospermia.

## Non obstructive Azoospermia

Hypogonadotropic Hypogonadism  
 $\uparrow$  FSH, LH  
 Bilateral small testis

### ① Hypospermatogenesis:

- Idiopathic ▸ Irradiation
- Drugs: cytotoxic drugs
- Systemic illness
- Hypogonadotropic Hypogonadism

### ② Maturation Arrest:

- Idiopathic (genetic origin)

### ③ Germinal cell aplasia

"Sertoli-cell only syndrome"

- Idiopathic ▸ irradiation
- Cytotoxic therapy
- Y chromosome microdeletion.

### ④ Seminiferous tubules sclerosis:

- Klinefelter's syndrome
- Vascular injury (testicular torsion)
- viral infection (Mumps orchitis)

## obstructive Azoospermia

Normal FSH

Normal testicular size

According to site of obstruction

### ① Epididymal obstruction:

① Congenital [idiopathic, genetic]

② Acquired:

- Post infection  $\rightarrow$  epididymitis.
- Post surgical  $\rightarrow$  epididymal cyst.

### ② Vas obstruction:

① Congenital bilateral Absent of vas

② Acquired: post surgical:

- post Herniotomy (Herniotomy)
- post vasectomy
- scrotal surgery.

### ③ Ejaculatory duct obstruction:

① Congenital (prostatic cyst)

② Acquired:

- bladder neck surgery
- post infection

Causes

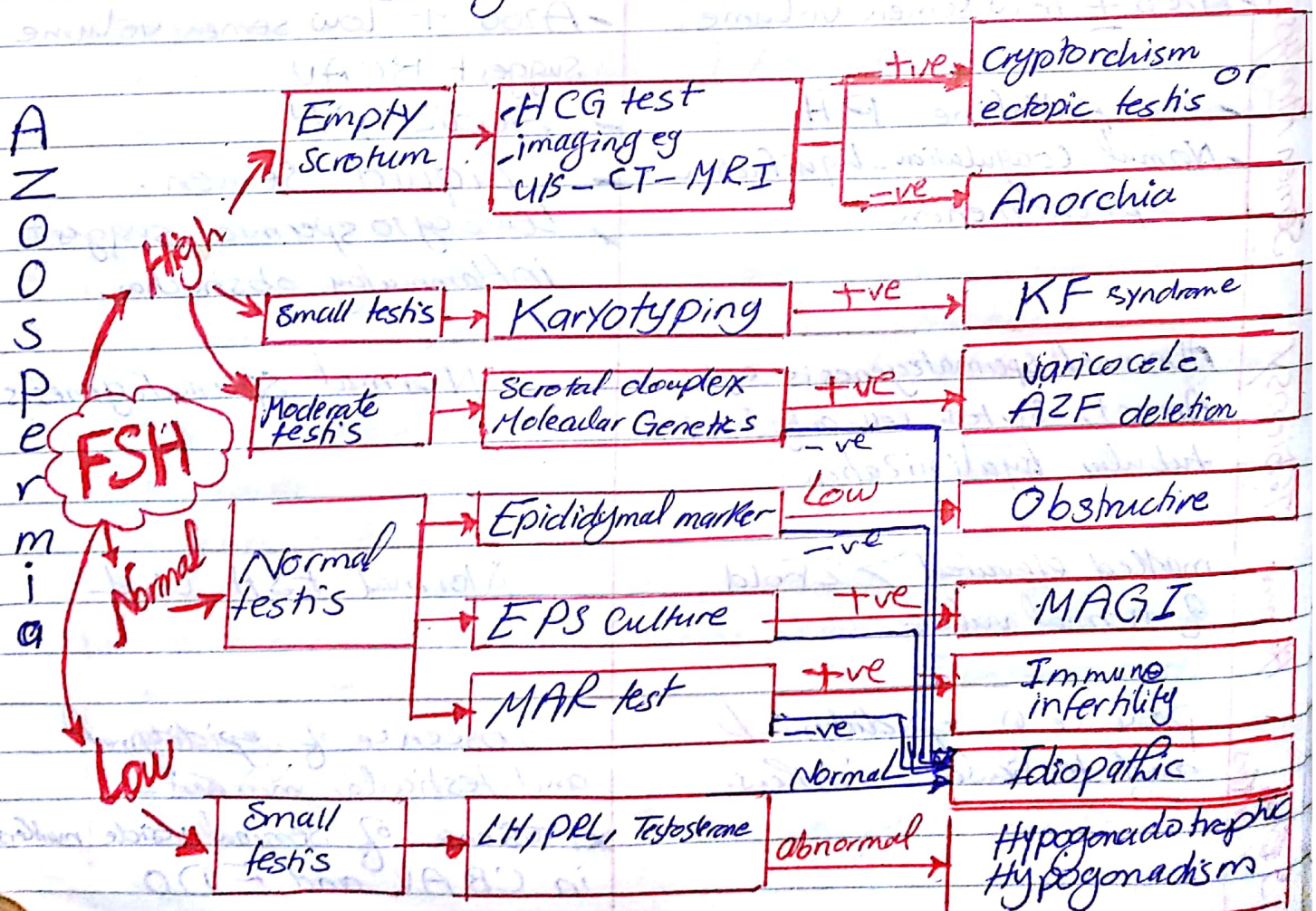


	Non obstructive Azoo "functional"	Obstructive Azospermia
History	<p>Post pubertal mumps orchitis</p> <p>Chemo or radiotherapy</p> <p>Delayed or failed puberty:</p> <p>testicular torsion or trauma.</p>	<p>Repeated UTI</p> <p>Gonorrhea or NGU</p> <p>Herniotomy during childhood</p>
Examination	<p>Small testicular size</p> <p>Normal epididymis.</p>	<p>Normal testicular size</p> <p>Bilat. full epididymal head &amp; tail nodules suggest post epididymitis obstruction</p> <p>T.B epididymitis is associated with beading of vas (i/s;)</p> <p>thickening of vas <math>\rightarrow</math> bilharzia</p>
Semen Analysis	<p>Azoo <math>\pm</math> low semen volume</p> <p>Alkaline PH</p> <p>Normal coagulation-liquifaction phenomenon</p>	<p>Azoo + low semen volume suggest BCU</p> <p>Acidic PH</p> <p>Liquid semen.</p> <p>Leucospermia suggest inflammatory obstruction.</p>
T biopsy	<p>Abnormal spermatogenesis eg:</p> <p>Arrest, Sertoli cell only</p> <p>tubular hyalinization</p>	<p>Normal spermatogenesis</p>
Hormone	<p>marked elevated <math>&gt; 2</math> Fold of normal value</p>	<p>Normal FSH Level</p>
Semen markers	<p>presence of epididymal and testicular markers.</p>	<p>Absence of epididymal and testicular markers.</p> <p>Presence of seminal vesicle markers in CBAV and EDD</p>



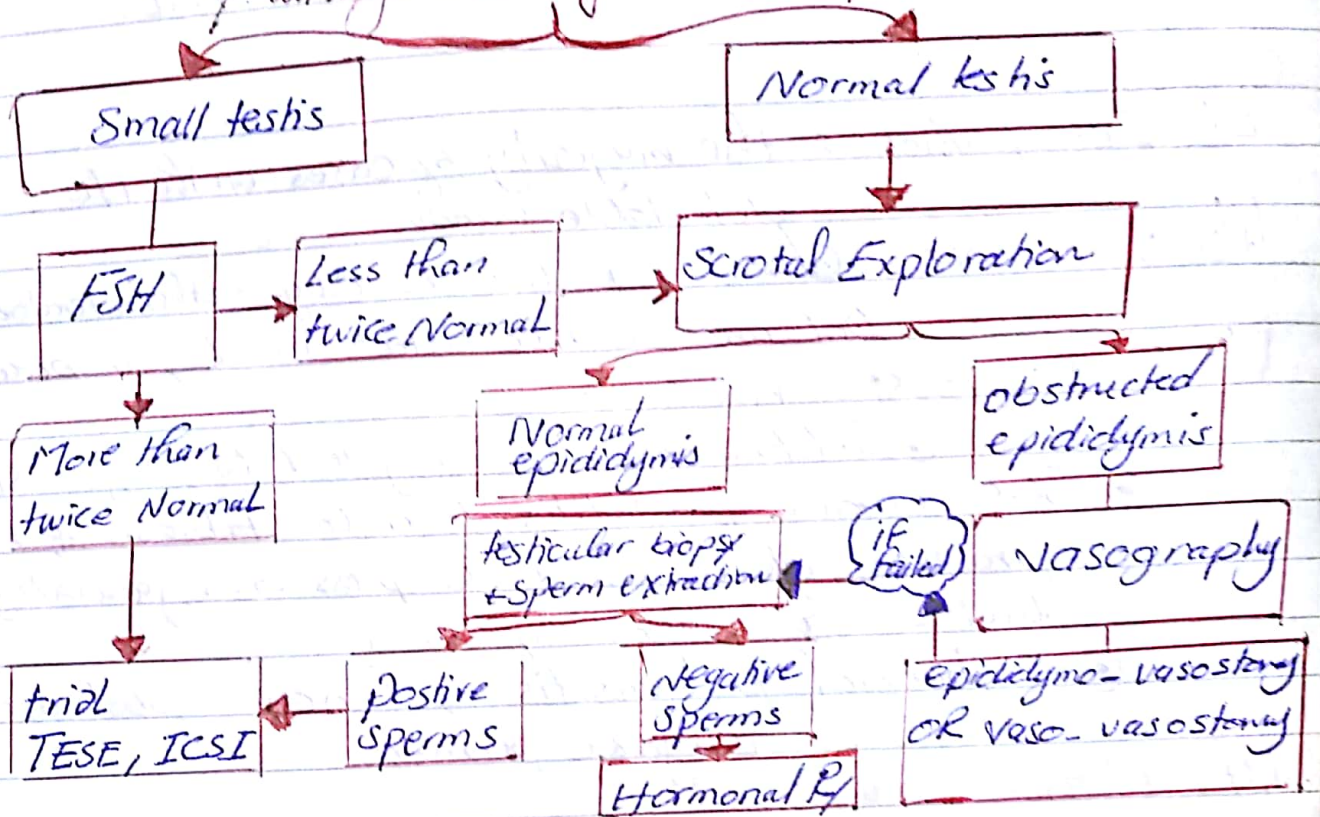
	Non obstructive	obstructive Azoospermia
Semen cytology	Staining of germ cells by some stains: Giemsa stain, MGG and Papanicolaou. if they are found → non obstructive Azo	① Absence → obstructive pathway.
Karyotyping	✗ Klinefelter Syndrome ✗ chromosome microdeletion	Normal Karyotyping
Imaging		vasography for diagnosis of site of obstructive. TRUS for diagnosis of EDO

## Diagnosis of Azoospermia





## Management of Azoospermia



### Management of Non obstructive Azoospermia

\* Trials of TESE or TESA → ICSI

### \* Management of obstructive azoospermia

① Surgical correction of the obstruction which may produce pregnancy by intercourse. Surgical correction may be accompanied by:   
 ▶ Microsurgical reconstruction of the vas and/or epididymis..   
 ▶ Transurethral resection of ejaculatory duct (TURED) of ejaculatory duct obstruction.

② Retrieval of sperm for IVF, ICSI by one of these methods:

MESA: Microsurgical epididymal sperm Aspiration.

PESA: Percutaneous epididymal sperm Aspiration.

TESE: testicular sperm extraction.

TESA: percutaneous testicular sperm Aspiration.



## Asthenozoospermia

① it means motility is less than 32% (a+b) progressive  
or  $< 40\%$  (a+b+c) progressive, non progressive.

② Types : ① oligoasthenozoospermia ② Isolated asthenozoospermia.

③ Causes of isolated asthenozoospermia:-

### Un proven causes

- 1- Varicocele
- 2- Epididymal dysfunction
- 3- Nutritional, vit deficiency  
(vit C, folate, zinc, selenium)
- 4- Genetic Factors  
(cystic fibrosis, Kartagener's)
- 5- Mental stress.
- 6- Smoking / Alcohol
- 7- Exposure to Heavy metals
- 8- Hormonal imbalance
- 9- Chemotherapy.

### Proven causes

- 1- mistake in collection of sample
- 2- Axonemal structure anomalies
- 3- Anti-sperm antibody.
- 4- Infection: Mycoplasma,  
E. coli, Trichomonas.  
Rx Culture, Antibiotic
- 5- Necrozoospermia.

④ Diagnosis :

- ① history
- ② Examination  $\swarrow$  varicocele  
urethral discharge (infection)
- ③ Lab examination  $\rightarrow$  Repeated semen analysis  
 $\rightarrow$  Post-massage urethral culture  
 $\rightarrow$  Anti-sperm antibody  
 $\rightarrow$  CASA (when sperm motility  $< 10\%$ )

⑤ Treatment :

### Specific Treatment

- $\rightarrow$  Immotile cilia syndrome  $\rightarrow$  ICSI
- $\rightarrow$  Un-explained  $< 10\%$  motility  $\rightarrow$  ICSI
- $\rightarrow$  Varicocele  $\rightarrow$  Varicocelectomy
- $\rightarrow$  Infection  $\rightarrow$  Culture + Antibiotic
- $\rightarrow$  Antisperm Antibody  $\rightarrow$  Steroid, IVF  
ICSI

### Empirical Rx

- Androgen Replacement
- PDE inhibitor
- Clomid - Tamoxifen
- Pentoxifylline



## Oligozoospermia

sperm Concentration below than  $15 \times 10^6$  /mL.

Causes:

- [1] Idiopathic: the majority of cases with No detectable cause.
- [2] Varicocele: Classic picture is Oligoastheno teratozoospermia but one or two defect are higher percentage.
- [3] Partial obstruction:

- ① unilateral obstruction may lead to oligozoospermia.
- ② Severe chronic prostatitis lead to fibrosis of the prostatic gland which compress on ejaculatory duct  $\rightarrow$  oligozoospermia.
- ③ Bilharzial perivasitis  $\rightarrow$  functional obstruction  $\rightarrow$  oligozoospermia.

[4] Other Causes:

- \* Partial Retrograde ejaculation.
- \* Bilateral hydrocele.
- \* unilateral cryptorchism
- \* Unilateral post pubertal mumps orchitis.
- \* Increased intrascrotal temperature.
- \* Radiation in moderate doses
- \* Gonadotoxic Drugs and chemical in small doses.
- \* Chronic malnutrition
- \* Systemic diseases: Renal failure, liver, etc.
- \* Hyperprolactinemia

Treatment of Oligozoospermia:

(A) Treatment of Causes:

1. Surgical correction of varicocele.
2. Antibiotics for male genital infections
3. Rx of Hyperprolactinemia: Bromocriptine
4. Stop Gonadotoxic drugs, stop smoking.



## (8) Treatment of idiopathic oligospermia, Asthenospermia

### [1] Medical therapy:

- ▷ Human chorionic Gonadotropin (HCG):  
2500-5000 IU/IM 1-3 times/week, it's doubtful that the pregnancy rate exceeds.
- ▷ Antiestrogen (Clomiphene citrate) (25 mg daily)  
higher doses can cause down-regulation.  
Tamoxifen (10-20 mg/day) have the similar results.
- ▷ Testosterone:  
aromatase inhibitor which inhibit aromatization  
of testosterone into Estradiol  
dose (100 mg daily) increase sperm count in 80%  
and pregnancy rate in 33%.
- ▷ Mesterolone: it's synthetic androgen it's widely used. dose (50-150 mg/day).
- ▷ Gonadotropin Releasing Hormone.

### [2] IUI, IVF, ICSI



# Hemospermia

The presence of blood in semen or (ejaculate).

Causes:

[1] Idiopathic.

[2] Infection / inflammation: the most common cause

- \* prostatitis Common

- \* urethritis, epididymo-orchitis, seminal vesiculitis

- \* STDs: Gonorrhea, Syphilis, HIV, chlamydia, ...

- \* Others: bilharziasis, TB, brucella, Hydatidid

[3] Trauma / Iatrogenic:

- \* physical Trauma: excessive masturbation  
excessive hard intercourse

- \* pelvic trauma, genital trauma, perineal trauma.

- \* after operations: postvasectomy, prostatic biopsy  
radiation therapy, pelvic fracture  
injection for hemorrhoids.

[4] Obstructive:

- \* prostatic Calcification, BPH.

- \* Calculi or cyst or dilatation or obstruction of  
Seminal vesicle, Ejaculatory duct.

[5] Vascular:

- \* Prostatic Varices

- \* Haemangioma

- \* venous varicosities, Arteriovenous malformation.

[6] Tumours:

Benign: Condyloma acuminata of urethra, urethral meatus  
BPH

Malignant: Cancer bladder, urethra, testicular tumour

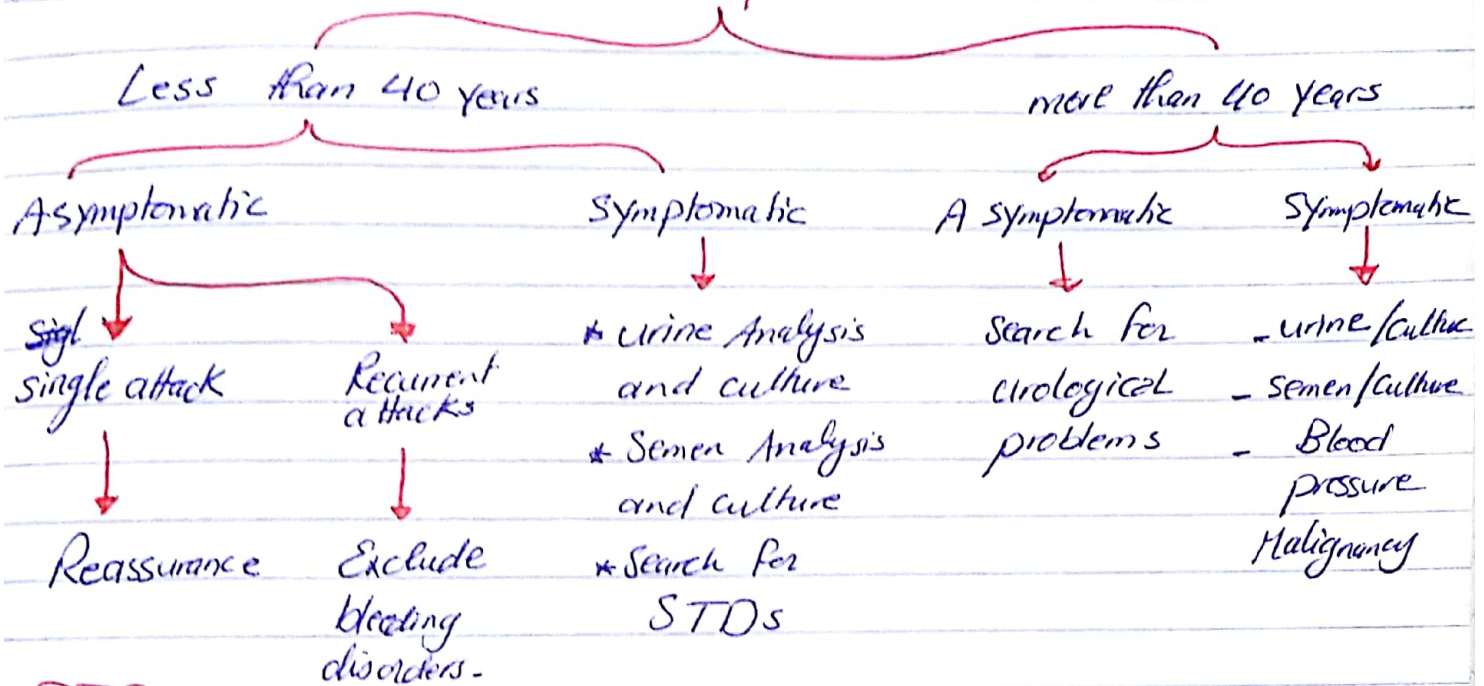
[7] Systemic diseases:

- \* HTN, Liver cirrhosis, Leukemia, purpura

- \* Drugs: Anti coagulants



## Hemospermia



**C/P**

- the pt is complaining of blood in semen.

the colour is varying from red to brown or black according to cause, duration. there is (+) pain

No decrease in Libido

- Examination for prostate, epididymis, Vas

- In TB, prostate is indurated, Nodular or even calcified

### Investigations:

⊗ Urine: to Exclude Haematuria, Pyuria, bilharziasis.

⊗ Semen: to ensure about Hemospermia, infection, Pus cells.

⊗ Semen culture: for chronic infection.

⊗ X-ray, Ultrasonography, Cystourethroscopy, MRI, CT

⊗ Trans Rectal Ultrasonography: for evaluation of S-vesicle, prostate

⊗ Blood examination: PSA, Liver function.

**Treatment:** \* treatment of the underlying cause

\* Hemospermia is commonly self limited

\* Diethyl stilboestrol 5mg once daily for 7 days.